UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/888,964	06/25/2001	Charles Boice	EN9010004US1	1429

7590   04/30/2004

Kevin P. Radigan, Esq.
HESLIN & ROTHENBERG, P.C.
5 Columbia Circle
Albany, NY 12203

EXAMINER
VO, TUNG T

ART UNIT	PAPER NUMBER
2613	

DATE MAILED: 04/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>03</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-39* is/are pending in the application.

  4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-39* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

  Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

  Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

  a)☐ All   b)☐ Some * c)☐ None of:

    1.☐ Certified copies of the priority documents have been received.

    2.☐ Certified copies of the priority documents have been received in Application No. _____.

    3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

  * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date <u>2</u>.

4) ☐ Interview Summary (PTO-413)
      Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____ .

DETAILED ACTION

Claim Rejections - 35 USC § 102

1.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2.   Claims 1-9, 11-24, 16-39 are rejected under 35 U.S.C. 102(b) as being anticipated by

Park et al. (US 5,528,628).

Re claim 1, Park discloses a system for encoding a sequence of video frames comprising:

multiple encoders connected in parallel (21 (1)...21(N) of fig. 2), each encoder to receive

the sequence of video frames for encoding thereof (SYMBOLS of fig. 2, SEE ALSO COL. 3,

lines 64 through col. 4, lines 9)), wherein each encoder of said multiple encoders employs a set

of encode parameters (22(1)...22(N) of fig. 2), at least one encode parameter (A PLURALITY

OF DIVERSE HUFFMAN CODE TABLE of fig. 2) of the sets of encode parameters being

varied between at least two encoders of the multiple encoders connected in parallel (25 of fig.

2);

a controller coupled to the multiple encoders (26 of fig. 2) for selecting one set of encode

parameters from the sets of encode parameters which best meets an encode objective;

and means (26 of fig. 2) for outputting a bitstream of encoded video data encoded from

the sequence of video frames using said one set of encode parameters (col. 4, lines 48-52).

Re claim 2, Park further discloses wherein said sequence of video frames comprises a

single channel bitstream of video data (SYMBOL INPUT of fig. 2).

Re claim 3, Park further discloses wherein the set of encode parameters employed by

each encoder of said multiple encoders comprises a predetermined static set of parameters (col.

4, lines 4- 33).

Re claim 4, Park further discloses wherein the set of encode parameters employed by

each encoder of said multiple encoders includes at least one of: a bit rate for a resultant encoded

stream; field or frame encoding; group of picture (GOP) structure, including number of B

pictures and distance between I pictures; and 3:2 pull down inversion (col. 2, line 1; e.g. MPEG

consists of a group of picture GOP, a GOP consists of I, P, and B frames, each frame consist of

macro-blocks).

Re claim 5, Park further discloses wherein said controller selects the set of encode

parameters which yields the best picture quality as measured by a picture quality indicator

(PQI) , wherein the encode objective comprises best picture quality (25 of fig. 2, e.g. the

comparator compares the best quality of pictures to select for encoding).

Re claim 6, Park further discloses wherein said bitstream of encoded video data is

produced by said system in a single pass of said sequence of video frames through said system

(SYMBOL passes through the system and the encoded data is outputted from the element (26 of

fig. 2)).

Re claim 7, Park further discloses wherein said controller ascertains the encode objective

from a plurality of possible encode objectives (26 of fig. 2).

Re claim 8, Park further discloses wherein the encode objective comprises one of best

picture quality, constant picture quality, VBV buffer fullness (23 (1) of fig. 2), constant bits

per picture, constant bit rate (CBR), transrating/transcoding, or variable bit

rate encoding (VBR) (1st VLC, 21(1) of fig. 2).

Re claim 9, Park further discloses wherein the set of encode parameters employed by

each encoder of the multiple encoders comprises at least one of the following parameters: bit

rate; field or frame encoding; GOP structure; 3:2 PDI; target bits per picture; predicted

average mquant; search range; promote P to I; demote I to P; average activity; and VBV

buffer fullness (see cols. 2-6).

10. The system of claim 1, wherein said controller comprises means for user

selection of the encode objective, and user initialization of one or more

encode parameters in the sets of encode parameters employed by the multiple

encoders.

Re claim 11, Park further discloses wherein said means for outputting comprises an

encode subsystem (26 of fig. 2) for subsequently encoding the sequence of video frames using

said one set of encode parameters to produce said bitstream of encoded video data.

Re claim 12, Park further discloses wherein said means (26 of fig. 2) for outputting

comprises means for outputting an encode result of an encoder of the multiple encoders

employing said selected one set of encode parameters (table selection information from the

comparator (25)), wherein said encoded result comprises said bitstream of encoded video data

(col. 4, lines 48-52).

Re claim 13, Park further discloses wherein said means for outputting comprises multiple buffers (23(1)...23(N) of fig. 2), each buffer connected to an output of a respective encoder of said multiple encoders (21(1) ... 21(N) of fig. 2), and means for forwarding a buffered encoded result of the encoder having the selected one set of encode parameters (25 and 25 of fig. 2).

Re claim 14, Park further discloses wherein each buffer comprises memory for storing encoded video data comprising at least one encoded frame of the sequence of video frames (1st BUFFER, 21(1) of fig. 2).

Re claim 15, Park further discloses wherein each buffer of said multiple buffers comprises memory for holding a number of encoded frames of the sequence of video frames sufficient to allow said controller to select said encoded result which best meets the encode objective (23(1)...23(N), 25, and 26 of fig. 2).

Re claim 16, Park further discloses an encode subsystem, and means for switching between said means for selecting and said encode subsystem (26 of fig. 2), wherein said bitstream of encoded video data can be taken as an output of one encoder of said multiple encoders, or can comprise an output of said encode subsystem as determined by said means for switching (col. 4, lines 47-55).

Re claim 17, Park further discloses wherein said controller further comprises means for adapting an encode parameter (26 of fig. 2, e.g. selecting one of encoders) in one or more encoders of the multiple encoders when no set of encode parameters of the sets of encode parameters employed by the multiple encoders roduces an encoded result which meets the encode objective.

Re claims 18-24, 26-31, see analysis in claims 1-9, 11-17.

Re claims 32-39, see analysis in claims 1-9, 11-17.

3.   Claims 1-12, 17-26, 31-39 are rejected under 35 U.S.C. 102(b) as being anticipated by

Suzuki (5,850,527).

Re claim 1, Suzuki discloses a system for encoding a sequence of video frames

comprising:

multiple encoders connected in parallel (71, 72...7m of fig. 5), each encoder to receive the

sequence of video frames for encoding thereof (3a, 3b, 3n of fig. 5), wherein each encoder of

said multiple encoders employs a set of encode parameters (bit rates, fig. 6), at least one encode

parameter (JPEG has variable compression rate between encoders as shown in figure 6) of the

sets of encode parameters being varied between at least two encoders of the multiple encoders

connected in parallel (71, 72... 7m of fig. 5);

a controller (5 of fig. 5) coupled to the multiple encoders (71, 72, ... 7m of fig. 5) for

selecting one set of encode parameters from the sets of encode parameters which best meets an

encode objective;

and means (8a of fig. 5) for outputting a bitstream of encoded video data encoded from

the sequence of video frames using said one set of encode parameters.

Re claim 2, Suzuki further discloses wherein said sequence of video frames comprises a

single channel bitstream of video data (3a of fig. 5).

Re claim 3, Suzuki further discloses wherein the set of encode parameters employed by

each encoder of said multiple encoders comprises a predetermined static set of parameters (9a

of fig. 5).

Re claims 4and 9, Suzuki further discloses wherein the set of encode parameters employed by each encoder of said multiple encoders includes at least one of: a bit rate for a resultant encoded stream; field or frame encoding; group of picture (GOP) structure, including number of B pictures and distance between I pictures; and 3:2 pull down inversion (MPEG consists of a group of picture GOP, a GOP consists of I, P, and B frames, each frame consist of macro-blocks and comprises frame rate as shown in figure 6).

Re claim 5, Suzuki further discloses wherein said controller (5 of fig. 5) selects the set of encode parameters which yields the best picture quality as measured by a picture quality indicator (PQI) , wherein the encode objective comprises best picture quality (MPEP-1, Video 1, or JPEG is selected for encoding as called quality images, see figure 6).

Re claim 6, Suzuki further discloses wherein said bitstream of encoded video data is produced by said system in a single pass of said sequence of video frames through said system (SYMBOL passes through the system and the encoded data is outputted from the element (where the input signal is selected for encoding (3a) that pass through the system in one pass).

Re claim 7, Suzuki further discloses wherein said controller (5 of fig. 5) ascertains the encode objective from a plurality of possible encode objectives.

Re claim 8, Suzuki further discloses wherein the encode objective comprises one of best picture quality, constant picture quality, VBV buffer fullness, constant bits per picture, constant bit rate (CBR), transrating/transcoding, or variable bit rate encoding (VBR) (see fig.6).

Re claims 10, Suzuki further discloses wherein said controller comprises means (5 of fig. 5) for user selection of the encode objective, and user initialization of one or more encode parameters in the sets of encode parameters employed by the multiple encoders (fig. 7,e.g. the

control unit 5 receives a signal which is sent from the users I, II through X, and then instructs

the reproduction unit, which stores the program demanded for by the user, so that the program

is provided with being compressed or uncompressed in accordance with the demand of the user.

When the user designates a compressing rate, the control unit 5 selects one of the encoders

which conducts the compression at, the designated compressing rate, and, when

the user does not designate a compressing rate, the control unit 5 selects any of the connection

devices)

Re claim 11, Suzuki further discloses wherein said means for outputting comprises an

encode subsystem (8a of fig. 5) for subsequently encoding the sequence of video frames using

said one set of encode parameters to produce said bitstream of encoded video data.

Re claim 12, Suzuki further discloses wherein said means (8a of fig. 5) for outputting

comprises means for outputting an encode result of an encoder of the multiple encoders

employing said selected one set of encode parameters (Compression Rate, see fig. 6), wherein

said encoded result comprises said bitstream of encoded video data (6a of fig. 5)).

Re claim 17, Suzuki further discloses wherein said controller further comprises means for

adapting an encode parameter (9a of fig. 5) in one or more encoders of the multiple encoders

when no set of encode parameters of the sets of encode parameters employed by the multiple

encoders reduces an encoded result which meets the encode objective.

Re claims 18-26, and 31, see analysis in claims 1-12, and 17.

Re claims 32-39, see analysis in claims 1-12, and 17.

Conclusion

4.   The prior art made of record and not relied upon is considered pertinent to applicant's

disclosure.

Perkins (US 6,188,729 B1) discloses a method and apparatus for effecting seamless data

rate changes in a video compression system.

Contact Information

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Tung T. Vo whose telephone number is (703) 308-5874. The

examiner can normally be reached on 6:30 AM - 3:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Chris. Kelley can be reached on (703) 305-4856. The fax phone number for the

organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Tung T. Vo
Examiner
Art Unit 2613

TUNG T. VO
PATENT EXAMINER

T.Vo